भारतीय मानक **IS 4399 : 2023**

Indian Standard

वस्त्रादि — औद्योगिक और विशेष प्रयोजनों के लिए नायलॉन कपड़ा — विशिष्टि

(पहला पुनरीक्षण)

Textiles — Nylon Fabric for Industrial and Special Purposes — Specification

(First Revision)

ICS 59.080.30

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भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
मानक भवन, 9 बहादुर शाह ज़फर मार्ग, नई दिल्ली - 110002
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI - 110002
www.bis.gov.in www.standardsbis.in

March 2023 **Price Group 6**

Industrial Fabrics Sectional Committee, TXD 33

FOREWORD

This Indian Standard (First Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Industrial Fabrics Sectional Committee had been approved by the Textiles Division Council.

This standard was first published in 1967. The present revision has been made in the light of experience gained since its last revision and to incorporate the following major changes:

a) Title of the standard has been modified;

b) Requirements and test method for colour fastness to washing and light have been modified;

c) Requirement for colour fastness to rubbing has been specified; and

d) Marking, packaging and sampling clauses have been modified. References to Indian Standards have been updated.

The composition of the Committee responsible for the formulation of this standard is listed in Annex B.

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 2022 'Rules for rounding off numerical values (*second revision*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

TEXTILES — NYLON FABRICS FOR INDUSTRIAL AND SPECIAL PURPOSES — SPECIFICATION

(First Revision)

1 SCOPE

1.1 This standard prescribes construction all details and other particulars of 6 varieties of nylon fabric, undyed ordered used for industrial and special purposes

1.2 This standard does not specify the general appearance, feel, etc. of the fabric (*see* **4.5**).

2 REFERENCES

The standards listed in Annex A contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of these standards.

3 MANUFACTURE

3.1 Yarn

Continuous filament nylon yarn of medium tenacity should be used in the manufacture of the fabric. The tenacity of the yarn should be so chosen that the fabric complies with the requirements of this standard. The approximate count of warp and weft yarn used in the manufacture of fabric is given in Table 1.

3.2 Fabric

3.2.1 The fabric should be free from weaving and processing defects.

3.2.2 The selvedges should be firm, straight, even and well woven. It should have the same tension as the remainder of the fabric.

3.2.3 The fabric should be scoured or dyed as required.

3.2.4 If the fabric is dyed, it should be dyed after scouring.

3.2.5 The fabric should be free from sizing or finishing materials.

4 REQUIREMENTS

4.1 The constructional particulars and other physical requirements of nylon fabric shall conform to the requirements given in Table 1. The length and width (with a tolerance of $\frac{+2}{-1}$ percent) of the fabric shall be as agreed to between the buyer and the seller when tested in accordance with IS 1954.

4.2 The fabric shall also conform to the chemical requirements specified in Table 2.

4.3 Dyeing

The fabric, if required shall be dyed with suitable dyes as agreed to between the buyer and the seller.

4.4 Water Repellancy

4.4.1 The fabric, if required, shall be given a water repellant finish by suitable materials as agreed to between the buyer and the seller.

4.4.2 The water repellant finish of the fabric shall be assessed by the ratings prescribed in Table 2.

4.5 Sealed Sample

4.5.1 If in order to illustrate or specify the general appearance, feel and certain in determinable unmeasurable characteristics of the fabric, a sample has been agreed upon and sealed, the supply shall be in conformity with the sample in such respects.

4.5.2 The custody of the sealed sample shall be a matter of prior agreement between the buyer and the seller.

5 MARKING

5.1 Each roll of fabric shall be legibly marked with the following information:

a) Name of the material;
b) Variety no.
c) Length and width of the fabric contained in a roll;
d) Colour fastness rating in case of dyed fabrics;
e) Year of manufacture; and
f) Manufacturer's name, initials or trade-mark, if any; and

g) Any other information as required by the law in force or as agreed between the buyer and the seller.

5.2 BIS Certification Marking

The product(s) conforming to the requirements of this standard may be certified as per the conformity assessment schemes under the provisions of the *Bureau of Indian Standards Act*, 2016 and the Rules and Regulations framed there under, and the product(s) may be marked with the Standard Mark.

5.3 PACKING

Unless otherwise specified in contract or order, the rolls of the nylon fabric shall be packed in accordance with the provisions laid down in IS 2195 or 2194 as applicable.

5.4 SAMPLING

5.4.1 The lot shall consist of all the rolls of fabric of the same variety delivered to a buyer against one dispatch note.

5.4.2 Unless otherwise sampling plan is specified in the contract or order, the sampling plan as given in Table 3 may be used for inspecting and testing of fabric against this standard. The number of rolls to be selected from the lot for assessing manufacture (see 3.1 and 3.2) and testing length, width, ends, picks and weight shall be as per col 2 of Table 3. The number of test specimens to be selected for other tests shall be in accordance with col 4 of Table 3. To ensure the randomness of selection, IS 4905 may be followed.

5.4.3 Criteria for Conformity

The lot shall be declared conforming to the requirements of this standard if the total number of defective samples does not exceed the permissible numbers given in col 3 or col 5 of Table 3 as applicable.

Table1 Constructional Particulars and Physical Requirements of Nylon Fabrics for Industrial and Special Purposes

(*Clauses* 3.1 *and* 4.1)

Variety No.	**Weave**	**Universal Count, Tex (or Denier) Of Yarn, Approximate**		**Ends/dm**	**Picks/dm**	**Mass,** g/m^2 *Min*	**Breaking Loadon 5.0x 20 cm,** kg, *Min*	
		Warp	**Weft**				**Warp way**	**Weft way**
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
i)	Plain	5.0 tex (or 45d) or 6.6 tex (or 60d)	5.0 tex (or 45d) or 6.6 tex (or 60d)	700 or 610	450 or 350	68	63	40
ii)	2/2 Matt	6.6 tex (or 60d)	6.6 tex (or 60d)	460	400	60	60	50
iii)	2/2 Matt	6.6 tex (or 60d)	6.6 tex (or 60d)	560	560	80	70	70
iv)	2/2 Matt	6.6 tex (or 60d)	6.6 tex (or 60d)	860	560	100	105	70
v)	2/2 Matt	9.9 tex (or 90d)	9.9 tex (or 90d)	640	560	130	125	95
vi)	2/2 Matt	23 tex (or 210d)	23 tex (or 210d)	410	380	200	200	180
Tolerance		+5/ – 2.5 Percent			+5/ – 2.5 Percent			
Method of Test		IS 1963			IS 1963	IS 1964	---- IS 1969 (Part 1)----	

NOTE — The count of yarn is given for the guidance of the manufacturer and may be altered provided other requirements of the fabric are met.

Table 2 Chemical Requirements of Nylon Fabrics for Industrial and Special Purposes

(*Clauses* 4.2 *and* 4.4.2)

Sl No.	Characteristic	Requirement	Method of Test
(1)	(2)	(3)	(4)
i)	*p*H value	6.0 to 8.5	IS 1390
ii)	Water repellency		
	a) Average of five tests, *Min*	80	IS 390
	b) Single test, *Min*	70	
iii)	Colour fastness to light (Dyed fabrics only)	5 or better	IS/ISO 105-B01 or IS/ISO105-B02
iv)	Colour fastness to washing (Dyed fabrics only)		IS/ISO105-C10
	a) Change in colour	4 or better	
	b) Staining on adjacent fabric	3 or better	
v)	Colour fastness to rubbing (Dyed fabrics only)		IS/ISO 105-X12
	a) Dry	4 or better	
	b) Wet	3 or better	

Table 3 Sampling Plan for Nylon Fabrics for Industrial and Special Purposes

(*Clauses* 5.4.2 *and* 5.4.3)

Sl No.	**Lot Size**	**Sample Size**	**Permissible No. of Defectives Samples**	**Sub-Sample Size** (to be drawn from sample)	**Permissible No. of Defectives Sub-Samples**
(1)	(2)	(3)	(4)	(5)	
i)	2 to 25	3	0	3	0
ii)	26 to 90	13	1	3	0
iii)	91 to 150	20	2	13	1
iv)	151 to 280	32	3	13	1
v)	281 to 500	50	5	20	1
vi)	501 to 1 200	80	7	32	2
vii)	1 201 and above	125	10	50	3

NOTE — If sample size equals or exceeds lot size, carry out 100 percent inspection.

ANNEXA
(*Clause* 2)

LISTOF REFERREDINDIANSTANDARDS

IS No	*Title*
IS 390 : 1975	Method for determining the water repellency of fabrics by water spray test (*first revision*)
IS 1390 : 2022/ISO 3071 : 2020	Textiles — Determination of *p*H of aqueous extract (*third revision*)
IS 1954 : 1990	Determination of length and width of woven fabrics — Methods (*second revision*)
IS 1963 : 1981	Methods for determination of threads per unit length in woven fabrics (*second revision*)
IS 1964 : 2001	Methods for determination of mass per unit length and mass per unit area of fabrics
IS 1969 (Part 1) : 2018 /ISO 13934-1 : 2013	Textiles — Tensile properties of fabrics: Part1 Determination of maximum force and elongation at maximum force using the strip method (*fourth revision*)
IS 2194 : 1963	Code for seaworthy packaging of man-made fibre fabrics
IS 2195 : 1964	Code for inland packaging of man-made fibre fabrics and man-made fibre yarns
IS 4905 : 2015/ISO 24153 : 2009	Random sampling and randomization procedures (*first revision*)
IS 6359 : 1971	Method for conditioning of textiles
IS/ISO105—B01 : 2014	Textiles — Tests for colour fastness: Part B 01 Colour fastness to light : Daylight
IS/ISO 105—B02 : 2014	Textiles — Tests for colour fastness: Part B 02 Colour fastness to artificial light : Xenon arc fading lamp test
IS/ISO 105-C10 : 2006	Textiles — Tests for colour fastness: Part C10 Colour fastness to washing with soap or soap and soda
IS/ISO 105—X12 : 2016	Textiles — Tests for colour fastness: Part X12 colour fastness to rubbing (*first revision*)

ANNEX B

(*Foreword*)

COMMITTEE COMPOSITION

Technical Textiles for Industrial Fabrics Sectional Committee, TXD 33

Organization	*Representative(s)*
PSG College of Technology, Coimbatore	DR G. THILAGAVATHI (***Chairperson***)
Ahmedabad Textile Research Association, Ahmedabad	SHRIMATI DEEPALI PLAWAT SHRI JIGAR DAVE (*Alternate*)
Central Coir Research Institute, Alappuzha	DR ANITA JACOB SHRIMATI SUMI SABESTIAN (*Alternate*)
Director General of Quality Assurance, Mumbai	SHRI PURUSOTTAM DE
DKTE Centre of Excellence in Non wovens, Kolhapur	SHRI ANIKET SBHUTE
Entermonde Polycoaters Ltd, Nashik	DR K. M . S. REDDY SHRI AJEY GODBOLE (*Alternate*)
Garware Technical Fibres Ltd, Pune	SHRI S. J. CHITNIS SHRI RAJENDRA GHADGE (*Alternate*)
ICAR- National Institute of Natural Fibre Engineering and Technology, Kolkata	DR MANIK BHOWMICK DR SANJOY DEBNATH (*Alternate*)
Indian Technical Textile Association, Mumbai	DR ANUP RAKSHIT SHRIMATI RUCHITA GUPTA (*Alternate*)
Kirti Filtration and Automation Pvt Ltd,Vadodara	SHRI KULIN MASTURLAL SHRIMATI KIRTI MASTURLAL (*Alternate*)
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Masturlal Pvt Ltd, Mumbai	SHRI SHRAMIK MASTURLAL
Office of the Textile Commissioner, Mumbai	SHRI NAROTTAM KUMAR SHRI AMAR K. CHAPHPEKAR (*Alternate*)
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Director General of Quality Assurance, Mumbai	SHRI PURUSOTTAM DE
SRF Ltd, Gurugram	SHRI A. R. RAJESH SHRIMATI ANGELINA DIVYA (*Alternate*)

Organization	*Representative(s)*
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The Bombay Textile Research Association,Mumbai	DR PRASANTA KUMAR PANDA DR SREE KUMAR (*Alternate*)
The Synthetic and Art Silk Mills Research Association, Mumbai	DR MANISHA MATHUR SHRIMATI ASHWINI SUDAM (*Alternate*)
Virendra Textiles, Noida	SHRI AMIT GUPTA
Welspun India	SHRI RAJEEV SHARMA SHRI BASUDEV BASU (*Alternate*)
BIS Directorate General	SHRI J. K. GUPTA, SCIENTIST 'E'/DIRECTOR AND HEAD (TEXTILES DEPARTMENT) [REPRESENTING DIRECTOR GENERAL (*Ex-officio*)]

Member Secretary

SHRI DHARMBEER
SCIENTIST 'C'/DEPUTY DIRECTOR
(TEXTILES DEPARTMENT), BIS

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BUREAU OF INDIAN STANDARDS

Headquarters:

Manak Bhavan, 9 Bahadur Shah Zafar Marg, New Delhi 110002
Telephones: 2323 0131, 2323 3375, 2323 9402 *Website*: www.bis.gov.in

Regional Offices: *Telephones*

Central : 601/A, Konnectus Tower -1, 6th Floor, DMRC Building, Bhavbhuti Marg, New Delhi 110002 — 2323 7617

Eastern : 8th Floor, Plot No 7/7 & 7/8, CP Block, Sector V, Salt Lake, Kolkata, West Bengal 700091 — 2367 0012, 2320 9474

Northern : Plot No. 4-A, Sector 27-B, Madhya Marg, Chandigarh 160019 — 265 9930

Southern : C.I.T. Campus, IV Cross Road, Taramani, Chennai 600113 — 2254 1442, 2254 1216

Western : Plot No. E-9, Road No.-8, MIDC, Andheri (East), Mumbai 400093 — 2821 8093

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